



Course Syllabus: Fundamentals of Robotics

McCoy School of Engineering
EENG 3273 – Required Course
Fall 2026

Contact Information

Instructor: Dr. Yuyao Wang
Office: MA 111 (Martin Hall)
Office hours: Monday, Wednesday and Friday 10:00 am - 11:00 am; Wednesday, Thursday 2:30 pm - 3:30 pm
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Lecture: Monday, Wednesday and Friday 9:00 am - 9:50 am, MY 131.
Lab: Friday 1:30 pm - 3:20 pm, MY 118.

Course Description

Introduction to robotics, kinematics and dynamics of robotic arms, rigid motions and homogeneous transformation, motion planning, computer vision, and control, as well as current trends in the robotics industry and their practical applications.

Prerequisites: EENG 2104 Electric Circuits; EENG 2212 Engineering Computation.

Other requirements: Basic computer skills and MATLAB.

Textbook & Instructional Materials

Required textbook:

John J. Craig, *Introduction to Robotics: Mechanics and Control*, 4th edition, Pearson.

Supplemental material:

Mark W. Spong, Seth Hutchinson, M. Vidyasagar, *Robot Modeling and Control*, Wiley.

Peter Corke, *Robotics, Vision and Control*, Springer (Robotics Toolbox for MATLAB is used in the culminating project).

Software and hardware: MATLAB with Robotics Toolbox; VEXcode; VEX CTE Workcell (available in the LAB).

Study Hours and Tutoring Assistance

Plan to spend at least 6 hours per week outside of class studying the material and completing homework and laboratory assignments. Do not wait until the last day to start working on an assignment or prepare for an exam. Utilize the instructor office hours listed above throughout the semester to seek clarification. Additional tutoring is available through the MSU Academic Success Center.

Student Handbook

Refer to: [Student Handbook](#)

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct. [Office of Student Conduct](#)

Moffett Library

Moffett Library provides resources and services to support student's studies and assignments, including books, peer-reviewed journals, databases, and multimedia materials accessible both on campus and remotely. The library offers media equipment checkout, reservable study rooms, and research assistance from librarians to help students effectively find, evaluate, and use information. Get started on this [Moffett Library webpage](#) to explore these resources and learn how to best utilize the library.

Grading

Table 1: Points allocated to each assignment

Assignments	Percentage
Midterm Exam 1	15
Midterm Exam 2	15
Homework	10
Labs	20
Project	20
Attendance & Class Performance	5
Final Exam	15
Total Points	100

Table 2: Total points for final grade.

Grade	Percentage
A	90 or above
B	80 to 89
C	70 to 79
D	60 to 69
F	Less than 60

Homework

Homework is assigned from selected chapters of the textbook and covers lecture topics such as coordinate transformations, D-H parameters, and kinematics. Homework must be submitted through D2L by the posted deadline. Copying from the solution manual or from classmates results in a zero for that assignment. Engineering work must be clear and organized.

Laboratory Format. This course includes laboratory activities using the VEX CTE Workcell, MATLAB, and related engineering software. Activities may include robotic-arm operation, coordinate-based motion, modeling, sensors, and workcell automation. Detailed laboratory and project requirements, schedules, and submission instructions will be provided through D2L. Unless otherwise stated by the instructor, all laboratory and project work must be completed individually.

Quizzes

No separate quizzes are given for this course. Homework and laboratory activities serve as the regular assessment components between exams.

Exams

Student performance is assessed through two midterm exams, a comprehensive final exam, homework, laboratory activities, and an individual Project. Each exam counts for 15% of the final course grade. All exams are closed-book, and a formula sheet may be provided or allowed by the instructor. Each midterm covers the course material developed before that exam, including related applications when applicable. The final is comprehensive. Exams are timed and must be taken on the scheduled date and time.

Projects Required

Students will complete an individual Project worth 20% of the final course grade. The Project will include selected MATLAB-based robotics analysis, VEX CTE Workcell automation, and evaluation of authorized AI-generated engineering content. Grades will be based on completion, testing, engineering verification, and explanation. Detailed activities, milestones, and grading criteria will be provided through D2L. Specific activities or equivalent alternatives may be adjusted based on course progress, equipment availability, and software

functionality while preserving the 20% grade weight and the main learning objectives.

Mid-Term Exam

Two midterm exams are given during the semester. Each midterm counts for 15% of the final grade, is closed-book with one formula sheet, and is administered during the regular class meeting.

Final Exam

The final exam is comprehensive and covers all material from the semester. It counts for 15% of the final grade, is closed-book, and is scheduled on December 7th, 2026, 8:00 a.m. - 10:00 a.m.

Extra Credit

Extra credit opportunities, if offered, will be announced to the class and made available to all students.

Late Work

Late homework may be accepted with a 20% deduction from the earned score.

Make Up Work/Tests

Make-up exams or labs are given only for an emergency supported by documentation or for a documented conflict caused by a scheduled athletic event or conference. Contact the instructor as soon as possible.

Important Dates

- Last day for term schedule changes: See the [MSU Academic Calendar](#) for Fall 2026.
- Deadline to file for graduation: See the [MSU Academic Calendar](#) for Fall 2026.

Desire-to-Learn (D2L)

D2L will be used to post homework assignments and grades, as well as to share course announcements and general information. You can log into [D2L](#) through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program.

Attendance

Attendance is required. Each unexcused absence deducts one point from the Attendance & Class Performance grade, to a minimum of zero. Students arriving more than 30 minutes late may attend the remaining class period, but the meeting will be recorded as an absence.

Students are expected to attend all meetings of the classes in which they are enrolled. Although in general students are graded on intellectual effort and performance rather than attendance, absences may lower the student's grade where class attendance and class participation are deemed essential by the faculty member. Instructor's records will stand as evidence of absences. A student with excessive absences may be dropped from a course by the instructor. Any individual faculty member or college has the authority to establish an attendance policy, providing the policy is in accordance with the General University Policies.

Recording Classes

Recording classes is generally prohibited without the professor's explicit permission. When permitted, recordings are for personal use only and may not be uploaded, shared, transmitted, or published without the professor's prior consent. Students who need recordings as a disability accommodation must obtain prior approval from Disability Support Services.

Instructor Class Policies

Classroom conduct. Once class starts, cell-phone use, private discussions, unauthorized computer use, work unrelated to the course, and derogatory remarks about classmates or the instructor are not accepted and may result in dismissal from that class meeting. Each documented violation may deduct one point from the Attendance & Class Performance grade.

Generative AI Access and Use Policy. Generative AI may be used only for activities specifically authorized by the instructor, including designated portions of the Project. AI is not permitted on exams.

For the Project, students will briefly document selected AI use and explain how at least one AI output was checked. AI output does not replace engineering analysis. Students remain responsible for the correctness, safety, and performance of their final work.

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exist in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Student Wellness Center, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

Emergency Aid Resources for Basic Needs

Unexpected life circumstances can affect anyone. If you are experiencing challenges meeting basic needs—such as housing, utilities, food, transportation, healthcare, technology, textbooks or other life necessities, resources may be available to help. Visit the [Student Emergency Support and Resources webpage](#) to learn more, and explore emergency support opportunities through MSU and how to access them. For additional information, please contact the Office of Student Affairs: Clark Student Center #108, (940) 397-7500, student.affairs@msutexas.edu.

College Policies

Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](#)

Smoking/Tobacco Policy

Midwestern State University seeks to provide a safe, healthy, pleasant environment for its faculty, staff, and students. To this end, the use of tobacco products, including smoke and smokeless tobacco, and the advertising, sale, free distribution, and discarding of tobacco products shall be prohibited in all indoor and outdoor facilities and in all university vehicles. The policy extends to faculty, staff, students, vendors, guests, and visitors.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [MSUReady – Active Shooter](#). Students are encouraged to watch the video entitled “Run. Hide. Fight.” which may be electronically accessed via the University police department’s webpage: [“Run. Hide. Fight.”](#)

Grade Appeal Process

Students should first try to resolve grade questions with the instructor. If the issue is not resolved, review the [Grade Appeal Checklist](#) and the [MSU Catalog](#).

***Notice:** Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Course Schedule:

The schedule below is tentative. Changes may be announced in class or through D2L; see the disclaimer above. Refer to the MSU Academic Calendar for official university-wide dates.

Week or Module	Activities/Assignments/Exams	Due Date
Week 1 8/24 to 8/28	Course introduction; robotics overview; MATLAB and linear algebra review	N/A
Week 2 8/31 to 9/4	Ch 2: coordinate frames, position vectors, and spatial descriptions	N/A
Week 3 9/7 to 9/11 (Labor Day 9/7)	Ch 2: rotation matrices and coordinate transformations	N/A
Week 4 9/14 to 9/18	Ch 2: homogeneous transformations, composition, and inverse transformations	N/A
Week 5 9/21 to 9/25	Ch 2: transformation equations, applications	N/A
Week 6 9/28 to 10/2	Ch 3: links, joints, frame assignment, and D-H parameters	N/A
Week 7 10/5 to 10/9	Ch 3: forward kinematics for serial manipulators	N/A
Week 8 10/12 to 10/16	Ch 3: forward-kinematics examples, verification, and MATLAB modeling	Midterm 1 (tentative)
Week 9 10/19 to 10/23	Ch 4: inverse-kinematics concepts, solution existence, and multiple solutions	N/A
Week 10 10/26 to 10/30	Ch 4: analytical inverse kinematics	N/A
Week 11 11/2 to 11/6	Ch 7: trajectory generation; Cubic polynomial	N/A
Week 12 11/9 to 11/13	Ch 7: linear function with parabolic blends; Project development	Midterm 2 (tentative)
Week 13 11/16 to 11/20	Introduction to robot dynamics and joint torque; Project development	N/A
Week 14 11/23 to 11/27	Project development; Thanksgiving holiday November 25-29	N/A
Week 15 11/30 to 12/4	Project completion, and final exam review	N/A
Finals 12/5 to 12/10	Final Exam	Dec 7th, 2026, 8:00 a.m. - 10:00 a.m.